Antecedents of Cerebral Palsy in children born at term

according to subtype, motor severity and accompanying impairments

Akademisk avhandling

Som för avläggande av medicine doktorexamen vid Sahlgrenska akademin vid Göteborgs universitet kommer att offentligen försvaras i hörsal Humlen, Servicehuset, SU/Östra Sjukhuset, Göteborg, fredagen den 26 februari 2016 kl 09.00

av

Kristina Ahlin

Fakultetsopponent:

Thomas Frederick McElrath, Brigham and Women's Hospital, Boston, USA

Avhandlingen baseras på följande delarbeten:

I. Ahlin K, Himmelmann K, Hagberg G, Kacerovsky M, Cobo T, Wennerholm UB, Jacobsson B. Non-infectious risk factors for different types of cerebral palsy in term-born babies: a population-based, case-control study. BJOG. 2013;120:724-731.

II. Ahlin K, Himmelmann K, Hagberg G, Kacerovsky M, Cobo T, Wennerholm UB, Jacobsson B. Cerebral palsy and perinatal infection in children born at term. Obstet Gynecol. 2013;122:41-9.

III. Ahlin K, Himmelmann K, Nilsson S, Sengpiel V, Jacobsson B. Antecedents of cerebral palsy according to severity of motor impairment. Accepted for publication in Acta Obstet Gynecol Scand.

IV. Ahlin K, Jacobsson B, Nilsson S, Himmelmann K. Antecedents and neuroimaging patterns in cerebral palsy with accompanying impairments: a population-based study in children born at term. Submitted.

UNIVERSITY OF GOTHENBURG

Antecedents of Cerebral Palsy in children born at term according to subtype, motor severity and accompanying impairments

Kristina Ahlin
Department of Obstetrics and Gynecology
Institute of Clinical Sciences, Sahlgrenska Academy at University of Gothenburg

ABSTRACT

Aims: To explore antecedents of cerebral palsy (CP) according to subtype, severity of motor impairment and accompanying impairments (epilepsy and/or cognitive impairments) in relation to neuroimaging patterns.

Material and methods: Case control studies were performed in a population-based serie of children with CP born at term (n=309), matched with a control group (n=618). The cases and the matched controls were divided into CP subtype; spastic hemiplegia, spastic diplegia or tetraplegia and dyskinetic CP and into severity of motor impairment; mild, moderate or severe. Obstetric records and the CP register of western Sweden were reviewed and 88 antecedents to CP were analyzed for their associations to different subtypes, severity of motor impairment, associated impairments in CP as well as to neuroimaging pattern. Binary logistic regression, the Cochran-Armitage Chi-squared test for trends, interaction analyses and interrelationship analyses were used. Both univariable and adjusted analyzes were performed.

Results: Paper I: The antecedent pattern differed by CP subtype. All subtypes shared a mix of prepartal, intrapartal and postpartal antecedents, except for dyskinetic CP, for which intra- and postpartal events played a major role. Paper II: Maternal infections were associated only with the subgroup spastic hemiplegia whereas neonatal infection was associated with the subgroups of spastic diplegia or tetraplegia. Paper III: The antecedent pattern differed by severity of motor impairment in CP. Timing of antecedents corresponded to identified neuroimaging patterns. Paper IV: The accompanying impairments epilepsy and cognitive impairment in CP were associated with poor intrauterine growth, maldevelopment, and neonatal infections. Accompanying impairments in CP are more often associated with abnormal neuroimaging than motor impairment alone.

Conclusions: The antecedent pattern differed by CP subtype, severity of motor impairment and by presence of accompanying impairments in CP. Our results might illustrate some of the causal pathways to CP, namely hypoxia, malformations and infection.

Keywords: cerebral palsy, spastic hemiplegia, spastic diplegia, spastic tetraplegia, dyskinetic, motor impairment, motor function, accompanying impairments, epilspsy, cognitive impairment, antecedents, risk factors

ISBN: 978-91-628-9073-5